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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,414	05/25/2001	Fred Discenzo	01AB121	6236

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EXAMINER

PEREZ DAPLE, AARON C

ART UNIT	PAPER NUMBER
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2154

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/866,414	DISCENZO ET AL.	
	Examiner	Art Unit	
	Aaron C Perez-Daple	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37,41-43,45-49 and 53-55 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-37,41-43,45-49 and 53-55 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 26 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Action is in response to Amendment filed 4/26/04, which has been fully considered.
2. Claims 1-37, 41-43, 45-49 and 53-55 are presented for examination.
3. Claims 38-40, 44, 50-52 and 56 have been cancelled by Applicant.
4. This Action is made FINAL.

Drawings

5. The Amended drawings filed 4/26/04 are objected to because they introduce new matter. Specifically the feedback signal 73 of Amended Figs. 3-6 constitutes new matter and must therefore be corrected. See the rejection of claims 42 and 54 under 35 USC 112, first paragraph, below.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The amendment filed 4/26/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "The diagnostics system 70 may further utilize a feedback loop 73 from the controller 71 to further assesses the health of the motorized system 12." See the rejection of claims 42 and 54 under 35 USC 112, first paragraph, below.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 42 and 54** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Specifically, claim 42 has been amended to recite a feedback signal (e.g.

the "driving output") from the controller to the diagnostics module. Figs. 3-6 and pg. 18, lines 19-29 have been similarly amended to show this feature.

Applicant draws support for these amendments from claim 42 as originally filed. The Examiner finds that claim 42 as originally filed is not sufficient to support these Amendments. Although the Examiner made an effort to interpret the Applicant's *intent* with respect to claim 42 as *intending* to claim a feedback signal, the Examiner explicitly interpreted the claim in a manner which was found to be most consistent with the claim as filed and which did *not* include the feedback signal. Specifically, in the rejection of claims 42 and 54 under 35 USC 112, second paragraph, the Examiner explicitly stated:

The examiner interprets that claim 42 should recite "wherein said controller generates said driving output based on said health assessment signal," in which case claim 42 repeats the limitation found in claim 41.

Under this interpretation, amendments to claim 42, the drawings, and the specification constitute new matter.

9. As a dependent claim, claim 54 suffers from the same deficiencies as claim 42.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. **Claims 1-7, 10, 11, 15, 31-34, 36, 37, 41-43, 45-47, 49, and 53-55** are rejected under 35 U.S.C. 102(e) as being anticipated by Hays et al (US 6,260,004 B1) (hereinafter Hays).

12. As for claims 1 and 32, Hays discloses a diagnostics and control system for controlling a motorized system and diagnosing the health thereof, comprising:

a controller operatively associated with the motorized system and adapted to operate the motorized system in a controlled fashion (micro-controller/PID controller 188, Fig. 4a); and

a diagnostics system operatively associated with the motorized system and adapted to diagnose the health of the motorized system according to a measured attribute associated with the motorized system, the diagnostics system providing a diagnostics signal to the controller (col. 6, lines 23-42, "The system apparatus...reducing pump wear."; col. 20, lines 65-68, "If diagnostic information...increases pump life.").

13. As for claim 2, Hays discloses the diagnostics and control system of claim 1, wherein the measured attribute comprises at least one of vibration, pressure, current, speed, and temperature (col. 1, lines 40-65, "Vibration monitoring equipment...called an 'orbit.'"; "col. 10, line 49 - col. 11, line 29, "Diagnostics apparatus 24...computing device 38."; vibration sensor 80, Fig. 1; col. 12, lines 63-66, "Machine sensors may...rotating equipment 14.").

14. As for claim 3, Hays discloses the diagnostics and control system of claim 1, wherein the motorized system comprises a motor and a load, and wherein the load comprises at least one of a valve, a pump, a conveyor roller, a fan, a compressor, and a gearbox (col. 6, lines 46-57, "Thus, the present invention...equipment monitoring variables.").

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15. As for claim 4, Hays discloses the diagnostics and control system of claim 1, wherein the diagnostics system provides a diagnostics signal according to the health of the motorized system, and wherein the controller provides a control signal to the motorized system according to at least one of a setpoint and the diagnostics signal (col. 14, lines 45-62, "In one embodiment...to rotating machine 14.>").
16. As for claim 5, Hays discloses the diagnostics and control system of claim 1, wherein the measured attribute comprises at least one vibration signal obtained from a sensor associated with a motor in the motorized system (vibration sensor 80, Fig. 1; col. 12, lines 63-66, "Machine sensors may...rotating equipment 14."; col. 13, lines 7-12, "Diagnostic apparatus 24...variables thereto.>").
17. As for claim 6, Hays discloses the diagnostics and control system of claim 5, wherein the diagnostics system is adapted to diagnose the health of at least one of a motor bearing, motor shaft alignment, and motor mounting according to the measured vibration (col. 13, lines 7-12, "Diagnostic apparatus 24...variables thereto.>").
18. As for claim 7, Hays discloses the diagnostics and control system of claim 6, wherein the diagnostics system is adapted to perform frequency spectral analysis of the vibration signal (col. 24, lines 31-55, "Referring to Fig. 16...by box 1614.>").
19. As for claim 10, Hays discloses the diagnostics and control system of claim 1, wherein the motorized system comprises a motorized pump, wherein the measured attribute comprises at least one vibration signal obtained from a sensor associated with the pump, and wherein the diagnostics system is adapted to diagnose the health of the pump according to

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the measured vibration (col. 12, lines 63-66, "Machine sensors may...rotating equipment 14."; col. 13, lines 7-12, "Diagnostic apparatus 24...variables thereto.").

20. As for claim 11, Hays discloses the diagnostics and control system of claim 10, wherein the diagnostics system is adapted to perform frequency spectral analysis of the vibration signal (col. 24, lines 31-55, "Referring to Fig. 16...by box 1614.").
21. As for claim 15, Hays discloses the diagnostics and control system of claim 1, wherein the motorized system comprises a motorized pump, wherein the measured attribute comprises a current associated with a motor in the motorized system, and wherein the diagnostics system provides a diagnostics signal indicative of pump cavitation according to the measured current (col. 8, lines 44-48, "The method is based...wear and tear."; col. 13, lines 13-18, "By receiving data...impending maintenance.").
22. As for claim 31, Hays discloses the diagnostics and control system of claim 1, wherein the diagnostics system comprises at least one of a neural network, an expert system, and a data fusion component (col. 4, lines 27-52, "MARINTEK has undertaken...for pump maintenance.").
23. As for claim 33, Hays discloses the method of claim 32, further comprising providing a diagnostics signal indicative of the health of the motorized system, wherein operating the motor comprises controlling the motor according to at least one of a setpoint and the diagnostics signal (col. 14, lines 45-62, "In one embodiment...to rotating machine 14.").
24. As for claim 34, Hays discloses the method of claim 33, further comprising measuring an attribute associated with the motorized system, wherein providing the diagnostics signal comprises obtaining a frequency spectrum of the measured attribute and analyzing the

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frequency spectrum in order to detect at least one fault in the motorized system (col. 24, lines 31-55, "Referring to Fig. 16...by box 1614.").

25. As for claim 36, Hays discloses the method of claim 32, wherein diagnosing the health of the motorized system according to a measured attribute associated with the motorized system comprises:

providing the measured attribute to at least one of a neural network, an expert system, and a data fusion component (col. 4, lines 41-52, "Recent published research...for pump maintenance."); and

providing a diagnostics signal indicative of the health of the motorized system from the at least one of a neural network, an expert system, and a data fusion component (col. 4, lines 41-52, "Recent published research...for pump maintenance.").

26. As for claim 37, Hays discloses the method of claim 36, wherein operating the motor comprises controlling the motor according to at least one of a setpoint and the diagnostics signal (col. 14, lines 55-62, "In another embodiment...to rotating machine 14.").

27. As for claims 41 and 42, Hays discloses an integrated control and diagnostics system for a motor, the system comprising:

a diagnostics module to generate a health assessment signal indicative of the health of the motor (computer 38, Fig. 1; col. 6, lines 23-42, "The system apparatus...reducing pump wear.");

a controller coupled to the motor, said controller outputting a driving output based on said health assessment signal, wherein said driving output is applied to the motor (micro-

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controller/PID controller 188, Fig. 4a; col. 6, lines 23-42, "The system apparatus...reducing pump wear.").

28. As for claim 43, Hays discloses the control and diagnostics system according to claim 41, wherein said controller is associated with at least one controllable parameter, said parameter being controllable in response to said health assessment signal (col. 6, lines 23-42, "The system apparatus...reducing pump wear.").
29. As for claim 45, Hays discloses the control and diagnostics system according to claim 41, further including at least one sensor, said sensor generating a signal indicative of a parameter associated with the motor, wherein the health assessment signal is based on the sensor signal (col. 13, lines 7-18, "Diagnostic apparatus...impending maintenance.").
30. As for claim 46, Hays discloses the control and diagnostics system according to claim 45, wherein said controller includes a velocity feedback loop and a torque feedback loop (col. 13, lines 39-50, "Additional machine sensors...rotating machine 14.").
31. As for claim 47, Hays discloses the control and diagnostics system according to claim 46, wherein said velocity feedback loop generates a current reference signal in response to the sensor signal, and said torque feedback loop generates the driving output in response to the current reference signal (col. 13, lines 39-50, "Additional machine sensors...rotating machine 14.").
32. As for claim 49, Hays discloses the control and diagnostics system according to claim 45, wherein said motor parameter is one of a group consisting of velocity and vibration (col. 13, lines 7-18, "Diagnostic apparatus...impending maintenance.").

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33. As for claim 53, Hays discloses the control and diagnostics system according to claim 41, wherein said diagnostics module includes an ASIC that generates the health assessment signal based on a process constraint (Fig. 4a).
34. As for claim 54, Hays discloses the control and diagnostics system according to claim 42, wherein said health assessment signal is indicative of whether the motor is deviating from a normal operating characteristic (col. 6, lines 23-42, "The system apparatus...reducing pump wear.").
35. As for claim 55, Hays discloses the control and diagnostics systems according to claim 41, further comprising a coordination module coupled to a plurality of the control and diagnostics systems, wherein said coordination module alters the driving output associated with one of the control and diagnostics systems based on the driving output of another one of the control and diagnostics systems (col. 13, lines 39-50, "Additional machine sensors...rotating machine 14.").

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

37. **Claims 8, 9, 12-14 and 16-19** are rejected under 35 U.S.C. 103(a) as being obvious over Hays (US 6,260,004 B1) in view of Ogi et al (US 5,419,197) (hereinafter Ogi).

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38. As for claims 8 and 12, although Hays discloses the use of artificial intelligence in control networks (col. 4, lines 41-52, "Recent published research...for pump maintenance."), Hays does not specifically disclose a diagnostics system comprising at least one of a neural network or an expert system, wherein frequency spectral analysis is performed using the at least one of a neural network or expert system. Ogi teaches a diagnostics system comprising at least one of a neural network or an expert system, wherein frequency spectral analysis is performed using the at least one of a neural network or expert system (col. 2, lines 29-57, "In order to achieve...the lapse of time."; col. 4, lines 45-57, "Subsequently, the normalized...the power supply."). It would have been obvious to one of ordinary skill in the art to modify Hays by using a diagnostics system comprising at least one of a neural network or an expert system, wherein frequency spectral analysis is performed using the at least one of a neural network or expert system, because this would provide the advantage of an adaptable system that can be used with a variety of sensor and equipment types, as taught by Hays (col. 2, lines 18-28, "It is an object...the lapse of time.").
39. As for claims 9 and 13, Hays discloses a diagnostics and control system similar to claims 8 and 12, wherein the controller provides a control signal to the motorized system according to at least one of a setpoint and the diagnostics signal (col. 14, lines 45-62, "In one embodiment...to rotating machine 14.>").
40. As for claim 14, Hays discloses a diagnostics and control system similar to claim 12, wherein the diagnostics system employs data fusion techniques in order to derive the at least one vibration signal from at least one sensor associated with the motorized system (col. 4, lines 41-52, "Recent published research...for pump maintenance.>").

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41. As for claim 16, although Hays discloses the use of artificial intelligence in control networks (col. 4, lines 41-52, "Recent published research...for pump maintenance."), Hays does not specifically disclose a diagnostics system comprising a neural network adapted to synthesize a change in condition signal from the measured current. Ogi discloses a neural network adapted to synthesize a change in condition signal from the measured current (col. 2, lines 29-57, "In order to achieve...the lapse of time."; col. 4, lines 45-57, "Subsequently, the normalized...the power supply."). It would have been obvious to one of ordinary skill in the art to modify Hays by using a diagnostics system comprising a neural network adapted to synthesize a change in condition signal from the measured current, because this would provide the advantage of an adaptable system that can be used with a variety of sensor and equipment types, as taught by Hays (col. 2, lines 18-28, "It is an object...the lapse of time.").
42. As for claim 17, Hays does not specifically teach the use of a preprocessing portion operatively coupled to neural network nor a post processing portion coupled to the neural network for determining whether the change in condition signal is due to a fault condition. Ogi teaches the use of a preprocessing portion operatively coupled to neural network and a post processing portion coupled to the neural network for determining whether the change in condition signal is due to a fault condition (col. 4, lines 9-13, "A processor 10 further...digital computer.").
43. As for claim 18, neither Hays nor Ogi specifically disclose the use of a fuzzy rule based expert system. "Official Notice" is given that both the use and advantages of fuzzy rule based expert systems are known and expected in the art. It would have been obvious to one of ordinary skill in the art to modify the teachings of Hays and Ogi by using a fuzzy rule

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based expert system because this would allow for making decisions based on general rules of diagnosis or control.

44. As for claim 19, Hays discloses a diagnostics and control system similar to claim 18, wherein the diagnostics system is adapted to detect at least one fault relating to the operation of the pump and at least one fault relating to the operation of the motor driving the pump according to the measured current (col. 12, lines 63-66, "Machine sensors may...rotating equipment 14."; col. 13, lines 7-12, "Diagnostic apparatus 24...variables thereto.").

45. **Claims 20-30 and 35** are rejected under 35 U.S.C. 103(a) as being obvious over Hays (US 6,260,004 B1) in view of Petsche et al (US 5,640,103).

46. As for claims 20-26 and 35, although obvious to one of ordinary skill in the art, Hays does not specifically disclose obtaining a space vector angular fluctuation from a current signal relating to operation of the motor in order to detect a fault in the motor. Petsche teaches obtaining a space vector angular fluctuation from a current signal relating to operation of the motor in order to detect a fault in the motor (col. 3, line 52-col. 4, line 2, "In accordance with...the training phase."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hays by obtaining a space vector angular fluctuation from a current signal relating to operation of the motor in order to detect a fault in the motor, because this would facilitate the detection and correction of motor faults, as taught by Petsche (col. 1, lines 8-19, "The present invention...or abnormally, respectively."). Furthermore, the various modifications recited in claims 22-26 would be obvious to one of ordinary skill in the art because, as demonstrated by Petsche, the use of space vectors for representing and analyzing time-varying current signals is well known in the art.

47. As for claim 27, Hays discloses the diagnostics and control system of claim 26, wherein the diagnostics system is adapted to analyze fluctuations in amplitude of the first spectral component in order to detect at least one fault associated with the motorized system (col. 1, line 48 - col. 2, line 14, "Monitoring machine performance...CSI Application paper....").
48. As for claim 28, Hays discloses the diagnostics and control system of claim 27, wherein the first frequency is approximately twice the frequency of power applied to a motor in the motorized system (col. 1, line 48 - col. 2, line 14, "Monitoring machine performance...CSI Application paper....").
49. As for claim 29, Hays does not specifically disclose the use of the Goertzel algorithm. "Official Notice" is given that both the use and advantages of the Goertzel algorithm are well known and expected in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hays by using a Goertzel algorithm to extract the amplitude of the first spectral component in order to analyze the amplitude of the first spectral component, because this is a well known method of spectral analysis.
50. As for claim 30, Hays discloses the diagnostics and control system of claim 29, wherein the at least one fault comprises at least one of a stator fault, a rotor fault, and an imbalance in the power applied to the motor in the motorized system (col. 13, lines 7-18, "Diagnostic apparatus...impending maintenance.").
51. **Claim 48** is rejected under 35 U.S.C. 103(a) as being obvious over Hays (US 6,260,004 B1) in view of Gotou et al (US 4,933,834) (hereinafter Gotou). As for claim 48, Hays does not specifically disclose the use of P-I controller to generate the current reference signal. Gotou teaches the use of a P-I controller in a velocity feedback loop to generate the current

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reference signal (col. 1, lines 13-31, "In conventional control systems...in recent years."). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hays by using a P-I controller to generate the current reference signal in a velocity feedback loop, because PI controllers are widely used in motor control systems to improve robustness and suppress the influence of disturbances, as taught by Gotou (col. 1, lines 13-31, "In conventional control systems...in recent years.").

Response to Arguments

Objection to Drawings

52. Previous objections to the drawings are hereby withdrawn. However, new objections to amended Figs. 3-6 are made above.

Claim Objections

53. Objection to claim 39 is withdrawn in view of cancellation of the claim.

112 Claim Rejections

54. The rejections of claims 50-52 under 35 USC 112, first and second paragraphs, are hereby withdrawn in view of cancellation of the claims.

55. The rejection of claims 42 and 54 under 35 USC 112, second paragraph, as indefinite is hereby withdrawn in view of Amendment. However, the Amendment has introduced new matter issues addressed above.

102 Claim Rejections

56. The rejections of claims 1-3, 5-7, 10-11, 15 and 32 under 35 USC 102(b) as anticipated by Haynes et al. (US, 4,965,513) is hereby withdrawn in view of Applicant's arguments, which are found persuasive.

57. The rejection of claims 1-7, 10, 11, 15, 31-34, 36-37, 41-43, 45-47, 49 and 53-55 under 35 USC 102(e) as anticipated by Hays et al. (US 6,260,004 B1) (hereinafter Hays) is hereby maintained. Applicant's arguments with respect to the Hays reference are not persuasive. Specifically, Applicant asserts that Hays fails to teach or suggest providing a diagnostics signal to the controller. The Examiner finds that Hays explicitly discloses providing a diagnostics signal to a controller in col. 20, lines 65-68, for the purpose of increasing pump life:

If diagnostic information is communicated to a control system, adjustments to pump operation for operating closer to the BEP increases pump life.

Moreover, Hays discloses at length communicating alert signals (e.g. diagnostics signals) from the diagnostics system to a controller for the purpose of maintaining safe operating conditions. See col. 18, line 59 through col. 19, line 38. Therefore, Hays teaches all the limitations of independent claims 1, 32 and 41. With respect to claim 41, the Examiner further notes that the claim has not been amended to include the limitation of providing a diagnostic signal to the controller and the arguments are therefore moot with respect to this claim.

Applicant is further referred to previously cited references US 4,933,834 and US 5,784,273 which also explicitly teach using a diagnostics signal to control the response of a motorized system.

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For all the reasons above, claims 1-7, 10, 11, 15, 31-34, 36-37, 41-43, 45-47, 49 and 53-55 are properly rejected under 35 USC 102(e) as anticipated by Hays et al. (US 6,260,004 B1).

58. The rejections of claims 38-40, 44, 50- 52 and 56 are hereby withdrawn in view of cancellation of the claims.

103 Claim Rejections

59. The rejections of claims 8, 9, 12-14, 16-30, 35, 48 and 50-52 under 35 USC 103(a) are hereby maintained since claims 1-7, 10, 11, 15, 31-34, 36-37, 41-43, 45-47 and 49, from which they depend, have been shown to be properly rejected.

Conclusion

60. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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61. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703) 305-4897. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (703) 305-8498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

 7/9/04
Aaron Perez-Daple


JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100